APPENDIX 5A. ENGINEERING DATA

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APPENDIX 5A. ENGINEERING DATA

5A.1 INTRODUCTION

This appendix presents baseline specifications and detailed cost-efficiency results for each of the commercial refrigeration equipment classes directly analyzed in the engineering analysis (chapter 5 of the technical support document (TSD)).

5A.2 BASELINE SPECIFICATIONS

Table 5A.2.1 shows baseline design options for each of the commercial refrigeration equipment classes analyzed in the engineering analysis. All changes to cost and efficiency are measured relative to this level in the engineering analysis. Refer to chapter 5 of the TSD for details about each baseline technology.

Table 5A.2.2 shows baseline specifications (or case design specifications) for each of the commercial refrigeration equipment classes analyzed in the engineering analysis. These specifications include dimensions, numbers of components, temperatures, nominal power ratings, and other case features that are necessary to calculate the energy consumption of each equipment class. In conjunction with baseline design option levels, the baseline specifications define the energy consumption and cost of the typical minimum technology equipment on the market.

Table 5A.2.1 Baseline Design Options[a]

	VOP.RC.M	VOP.RC.L	VOP.SC.M	SVO.RC.M	SVO.SC.M	HZO.RC.M	HZO.RC.L	HZO.SC.M
Lighting for VOP, SVO, and SOC	T8 Electronic	T8 Electronic	T8 Electronic	T8 Electronic	T8 Electronic	-	-	-
Lighting for VCT and PD	-	-	-	-	-	-	-	-
Evaporator Coil	Standard Coil	Standard Coil	Standard Coil	Standard Coil	Standard Coil	Standard Coil	Standard Coil	Standard Coil
Evaporator Fan Motors	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole
Case Insulation	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Doors for VCT.XX.L/I	-	-	-	-	-	-	-	-
Doors for VCT/PD.XX.M	-	-	-	-	-	-	-	-
Doors for HCT.XX.L/I	-	-	-	-	-	-	-	-
Doors for HCT.XX.M	-	-	-	-	-	-	-	-
Doors for SOC.XX.L/I	-	-	-	-	-	-	-	-
Doors for SOC.XX.M	-	-	-	-	-	-	-	-
Condenser Coil Area (SC Only)	-	-	Standard	-	Standard	-	-	Standard
Condenser Fan Motors (SC only)	-	-	Shaded Pole	-	Shaded Pole	-	-	Shaded Pole
Compressor (SC only)	-	-	Single-Speed Hermetic	-	Single-Speed Hermetic	-	-	Single-Speed Hermetic
Night Curtains	None	None	None	None	None	-	-	-

[a] Equipment class designations consist of a combination—in sequential order separated by a period—of an equipment family code (VOP - vertical open, SVO - semivertical open, HZO - horizontal open, VCT - vertical closed transparent, VCS - vertical closed solid, HCT - horizontal closed transparent, HCS - horizontal closed solid, SOC - service over counter, or PD – pull-down equipment), an operating mode code (RC - remote condensing or SC - self-contained), and a rating temperature code (M - medium temperature, L - low temperature, or I - ice-cream temperature). See chapter 3, Market and Technology Assessment, for a more detailed explanation of the equipment class terminology.

Table 5A2.1 Cont.

	HZO.SC.L	VCT.RC.M	VCT.RC.L	VCT.SC.M	VCT.SC.L	VCT.SC.I	VCS.SC.M	VCS.SC.L	VCS.SC.I
Lighting for VOP, SVO, and SOC	-	-	-	-	-	-	-	-	-
Lighting for VCT and PD	-	T8 Electronic	T8 Electronic	T8 Electronic	T8 Electronic	T8 Electronic	-	-	-
Evaporator Coil	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Evaporator Fan Motors	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole
Case Insulation	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Doors for VCT.XX.L/I	-	-	Standard	-	Standard	Standard	-	-	-
Doors for VCT/PD.XX.M	-	Standard	-	Standard	-	-	-	-	-
Doors for HCT.XX.L/I	-	-	-	-	-	-	-	-	-
Doors for HCT.XX.M	-	-	-	-	-	-	-	-	-
Doors for SOC.XX.L/I	-	-	-	-	-	-	-	-	-
Doors for SOC.XX.M	-	-	-	-	-	-	-	-	-
Condenser Coil Area (SC Only)	Standard	-	-	Standard	Standard	Standard	Standard	Standard	Standard
Condenser Fan Motors (SC only)	Shaded Pole	-	-	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole
Compressor (SC only)	Single-Speed Hermetic	-	-	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic
Night Curtains	-	-	-	-	-	-	-	-	-

Table 5A2.1 Cont.

	HCT.SC.M	HCT.SC.L	HCT.SC.I	HCS.SC.M	HCS.SC.L	SOC.RC.M	PD.SC.M
Lighting for VOP, SVO, and SOC	-	-	-	-	-	-	-
Lighting for VCT and PD	-	-	-	-	-	T8 Electronic	T8 Electronic
Evaporator Coil	-	-	-	-	-	Standard	Standard
Evaporator Fan Motors	-	-	-	-	-	Shaded Pole	Shaded Pole
Case Insulation	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Doors for VCT.XX.L/I	-	-	-	-	-	-	-
Doors for VCT/PD.XX.M	-	-	-	-	-	-	Standard
Doors for HCT.XX.L/I	-	Standard	Standard	-	-	-	-
Doors for HCT.XX.M	Standard	-	-	-	-	-	-
Doors for SOC.XX.L/I	-	-	-	-	-	-	-
Doors for SOC.XX.M	-	-	-	-	-	Standard	-
Condenser Coil Area (SC Only)	Standard	Standard	Standard	Standard	Standard	-	Standard
Condenser Fan Motors (SC only)	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	Shaded Pole	-	Shaded Pole
Compressor (SC only)	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	Single-Speed Hermetic	-	Single-Speed Hermetic
Night Curtains	-	-	-	-	-	-	-

Table 5A.2.2 Baseline Specifications

	VOP.RC.M	VOP.RC.L	VOP.SC.M	SVO.RC.M	SVO.SC.M	HZO.RC.M	HZO.RC.L
Case Length (ft)	12	12	4	12	4	12	12
Case Gross Refrigerated Volume (ft^3)	130.2	109.83	32	46.55	9.4	33	55
Case Total Display Area (ft^2)	53.3	44.66	14.93	40	12.8	33	46
Number of Doors (#)	0	0	0	0	0	0	0
Single Door Area (ft^2)	0	0	0	0	0	0	0
Non-Door Glass Area (ft^2)	0	0	0	0	0	0	0
Non-Door Anti-Sweat Power (W)	0	600	0	50	100	50	200
Wall Area (ft^2)	175.925	214	61	113.4	40.2	93.275	140
Insulation Thickness (in.)	1.5	2	1.5	1.5	1.5	1.5	2
Case Interior Surface Area (ft^2)	130.225	118.5	47.5	72.5	21.3	48.35	82
Air Curtain Angle from Vertical (°)	8.5	7.28	6.05	47	57	82	90
Infiltrated Air Mass Flow (lb/hr)	860	530	300	590	220	250	140
Number of Bulbs in Conditioned Space (#)	12	0	4	9	3	0	0
Number of Bulbs Not in Conditioned Space (#)	9	9	3	6	2	0	0
Number of Ballasts in Conditioned Space (#)	0	0	0	0	0	0	0
Number of Ballasts Not in Conditioned Space (#)	7	3	3	5	2	0	0
Evaporator Fan Nominal Rated Wattage (W/fan)	9	9	6	9	6	9	6
Number of Evaporator Fans per Case (#)	6	14	2	4	1	4	4
Condenser Fan Nominal Rated Wattage (W/fan)	0	0	9	0	9	0	0
Number of Condenser Fans per Case (#)	0	0	3	0	1	0	0
Discharge Air Temperature (DAT) (F)	25	-10	25	25	25	25	-10
Baseline Evaporator Temperature (SET) (F)	15	-20	15	15	15	15	-20
Baseline Condenser Temperature (SCT) (F)	0	0	95	0	95	0	0
Compressor Oversize Multiplier	0	0	1.4	0	1.4	0	0
Defrost Mechanism (OFF, ELE, MAN)	OFF	ELE	OFF	OFF	OFF	ELE	ELE
Defrost Time per Day (hr)	4.5	2	2.8	3	2.8	1	1
Defrost and Drain Heater Power (W)	0	8700	0	0	0	1000	3000
Condensate Pan Heater Power (W)	0	0	1500	0	1100	0	0

Table 5A2.2 Cont.

	HZO.SC.M	HZO.SC.L	VCT.RC.M	VCT.RC.L	VCT.SC.M	VCT.SC.L	VCT.SC.I
Case Length (ft)	4	4	12.725	12.74	4.5	4.5	4.3
Case Gross Refrigerated Volume (ft^3)	7.5	7.4	142	133.5	49	49	48
Case Total Display Area (ft^2)	12	12	65	65	20.7	20.7	26
Number of Doors (#)	0	0	5	5	2	2	2
Single Door Area (ft^2)	0	0	13	13	10.35	10.35	13
Non-Door Glass Area (ft^2)	4	4	0	0	0	0	0
Non-Door Anti-Sweat Power (W)	100	300	0	0	0	0	0
Wall Area (ft^2)	54	52	204	200	73.02	73.02	77
Insulation Thickness (in.)	1.5	2	1.5	2	1.5	2	2.5
Case Interior Surface Area (ft^2)	19.8	19.5	146.5	145	63.98	63.98	64
Air Curtain Angle from Vertical (°)	85	85	-	-	-	-	-
Infiltrated Air Mass Flow (lb/hr)	100	100	30	30	10.61	10.60	15
Number of Bulbs in Conditioned Space (#)	0	0	6	6	3	3	3
Number of Bulbs Not in Conditioned Space (#)	0	0	0	0	0	0	0
Number of Ballasts in Conditioned Space (#)	0	0	6	6	3	3	3
Number of Ballasts Not in Conditioned Space (#)	0	0	0	0	0	0	0
Evaporator Fan Nominal Rated Wattage (W/fan)	6	6	6	6	6	9	9
Number of Evaporator Fans per Case (#)	1	1	5	5	2	2	2
Condenser Fan Nominal Rated Wattage (W/fan)	6	6	0	0	6	6	6
Number of Condenser Fans per Case (#)	1	1	0	0	2	2	2
Discharge Air Temperature (DAT) (F)	25	-10	32	-5	25	-10	-20
Baseline Evaporator Temperature (SET) (F)	15	-20	27	-11	15	-20	-30
Baseline Condenser Temperature (SCT) (F)	95	95	0	0	95	95	95
Compressor Oversize Multiplier	1.4	1.4	0	0	1.4	1.4	1.4
Defrost Mechanism (OFF, ELE, MAN)	ELE	ELE	OFF	ELE	OFF	ELE	ELE
Defrost Time per Day (hr)	1	1.5	1	1	1	1	1
Defrost and Drain Heater Power (W)	400	900	0	5000	0	1766.09	2580
Condensate Pan Heater Power (W)	300	400	0	0	0	200	200

Table 5A2.2 Cont.

	VCS.SC.M	VCS.SC.L	VCS.SC.I	HCT.SC.M	HCT.SC.L	HCT.SC.I	HCS.SC.M
Case Length (ft)	4.5	4.5	4.3	3.8	3.8	3.42	4.2
Case Gross Refrigerated Volume (ft^3)	49	49	48	8.83	8.83	10.2	7.03
Case Total Display Area (ft^2)	0	0	0	7.656	7.656	5.12	0
Number of Doors (#)	2	2	2	2	2	2	1
Single Door Area (ft^2)	10.35	10.35	13	3.828	3.828	2.56	7.03
Non-Door Glass Area (ft^2)	0	0	0	0	0	0	0
Non-Door Anti-Sweat Power (W)	0	0	250	0	0	0	0
Wall Area (ft^2)	73.02	73.02	77	34.75	34.75	36.77	27.50
Insulation Thickness (in.)	1.5	2	2.5	1.5	2	2.5	1.5
Case Interior Surface Area (ft^2)	0	0	0	0	21.34	26.1	0
Air Curtain Angle from Vertical (°)	-	-	-	-	-	-	-
Infiltrated Air Mass Flow (lb/hr)	10.61	10.60	15	2.25	2.25	3	2.49
Number of Bulbs in Conditioned Space (#)	0	0	0	0	0	0	0
Number of Bulbs Not in Conditioned Space (#)	0	0	0	0	0	0	0
Number of Ballasts in Conditioned Space (#)	0	0	0	0	0	0	0
Number of Ballasts Not in Conditioned Space (#)	0	0	0	0	0	0	0
Evaporator Fan Nominal Rated Wattage (W/fan)	6	9	9	0	0	0	0
Number of Evaporator Fans per Case (#)	2	2	2	0	0	0	0
Condenser Fan Nominal Rated Wattage (W/fan)	6	6	6	9	9	9	9
Number of Condenser Fans per Case (#)	2	2	2	1	1	1	1
Discharge Air Temperature (DAT) (F)	25	-10	-20	25	-10	-20	25
Baseline Evaporator Temperature (SET) (F)	15	-20	-30	15	-20	-30	15
Baseline Condenser Temperature (SCT) (F)	95	95	95	95	95	95	95
Compressor Oversize Multiplier	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Defrost Mechanism (OFF, ELE, MAN)	OFF	ELE	ELE	OFF	MAN	MAN	OFF
Defrost Time per Day (hr)	1	1	1	1	0	0	1
Defrost and Drain Heater Power (W)	0	1766.09	2580	0	0	0	0
Condensate Pan Heater Power (W)	0	200	200	0	0	0	0

Table 5A2.1 Cont.

	HCS.SC.L	SOC.RC.M	PD.SC.M
Case Length (ft)	4.2	12	2.5
Case Gross Refrigerated Volume (ft^3)	7.03	66	27
Case Total Display Area (ft^2)	0	51	11.6
Number of Doors (#)	2	6	1
Single Door Area (ft^2)	3.125	3.5	11.6
Non-Door Glass Area (ft^2)	0	30	0
Non-Door Anti-Sweat Power (W)	0	200	0
Wall Area (ft^2)	27.5	84.6	57.58
Insulation Thickness (in.)	2	1.5	1.5
Case Interior Surface Area (ft^2)	0	61.6	46.71
Air Curtain Angle from Vertical (°)	-	-	-
Infiltrated Air Mass Flow (lb/hr)	2.49	15	5.89
Number of Bulbs in Conditioned Space (#)	0	15	2
Number of Bulbs Not in Conditioned Space (#)	0	0	0
Number of Ballasts in Conditioned Space (#)	0	0	1
Number of Ballasts Not in Conditioned Space (#)	0	5	0
Evaporator Fan Nominal Rated Wattage (W/fan)	0	9	6
Number of Evaporator Fans per Case (#)	0	4	1
Condenser Fan Nominal Rated Wattage (W/fan)	9	0	6
Number of Condenser Fans per Case (#)	1	0	1
Discharge Air Temperature (DAT) (F)	-10	30	25
Baseline Evaporator Temperature (SET) (F)	-20	20	15
Baseline Condenser Temperature (SCT) (F)	95	0	95
Compressor Oversize Multiplier	1.4	0	2
Defrost Mechanism (OFF, ELE, MAN)	MAN	ELE	OFF
Defrost Time per Day (hr)	0	1.2	1
Defrost and Drain Heater Power (W)	0	1600	0
Condensate Pan Heater Power (W)	0	0	0

5A.3 LIGHTING CONFIGURATIONS

Lighting for use in cases with transparent doors functions differently than lighting for use in cases without doors. Cases with transparent doors typically display boxed merchandise, and only products on the front of the shelves are visible to the consumer. Therefore, the only portion of the display case that requires illumination is the area on the front surface of the case at the front of the shelves. Since this is only a limited area that requires lighting, light-emitting diodes (LEDs) offer an advantage over fluorescent lighting in vertical refrigerated cases with transparent doors because of the directional nature of LED lighting.

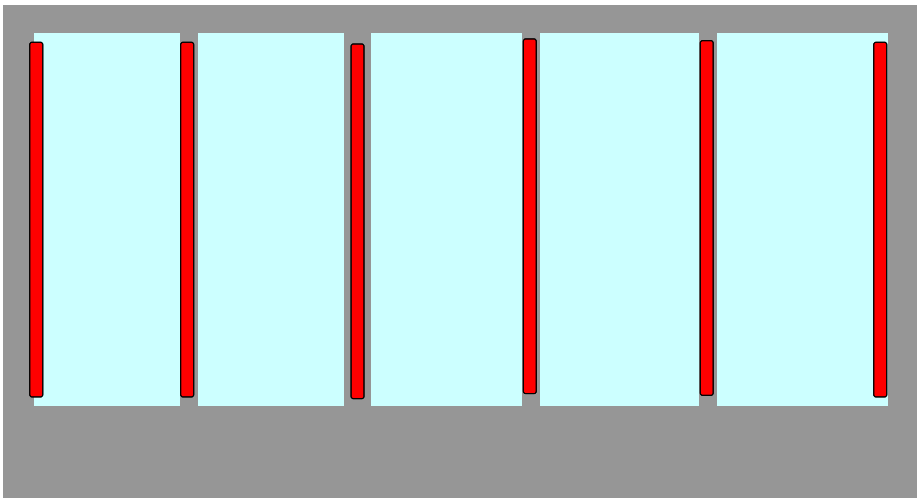
As part of the engineering analysis for the 2009 final rule, the U.S. Department of Energy (DOE), with input from manufacturers and other stakeholders, developed lighting configurations for cases with transparent doors. DOE has retained these configurations as part of this analysis, and has further developed additional configurations for equipment classes not covered in the 2009 rulemaking. For the VCT equipment family, DOE assumed one fluorescent bulb on each mullion and a fluorescent bulb on each end of the case. There are two different types of LED lighting used in cases with transparent doors. A center mullion lighting fixture is used between doors and is designed to have half of the LED emitters directed toward one door and half of the LED chips directed toward the other door. An end mullion lighting fixture has half the light

output, cost, and power consumption of a center mullion lighting fixture. The LED emitters in an end mullion lighting fixture are all directed toward the one door next to which they are located. Therefore, two end mullion lighting fixtures are the approximately equivalent to a single center mullion lighting fixture with regard to cost, light output, and power consumption. DOE modeled the LED lighting for the VCT equipment family using a center mullion lighting fixture and assumed one center mullion lighting fixture per door. Illustrative front views of the lighting configurations for both fluorescent and LED lighting for the VCT equipment family are shown in Figure 5A.3.1 through Figure 5A.3.6. The red strips represent a fluorescent bulb inside the refrigerated volume, the blue strips represent an LED center mullion lighting fixture inside the refrigerated volume, and the green strips represent an LED end mullion lighting fixture inside the refrigerated volume.

Bulb In =
LED In =
1/2 LED In =

Center Mullion
End Mullion (one on either end of case, resulting in the equivalent of a single center mullion)

VCT.RC.M
Lighting Type: Fluorescent
Case Length [ft]: 12.7
Bulb Length [ft]: 5
Bulbs In: 6
Bulbs Out: 0



VCT.RC.M
Lighting Type: LED
Case Length [ft]: 12.7
Bulb Length [ft]: 5
LEDs In: 5
LEDs Out: 0

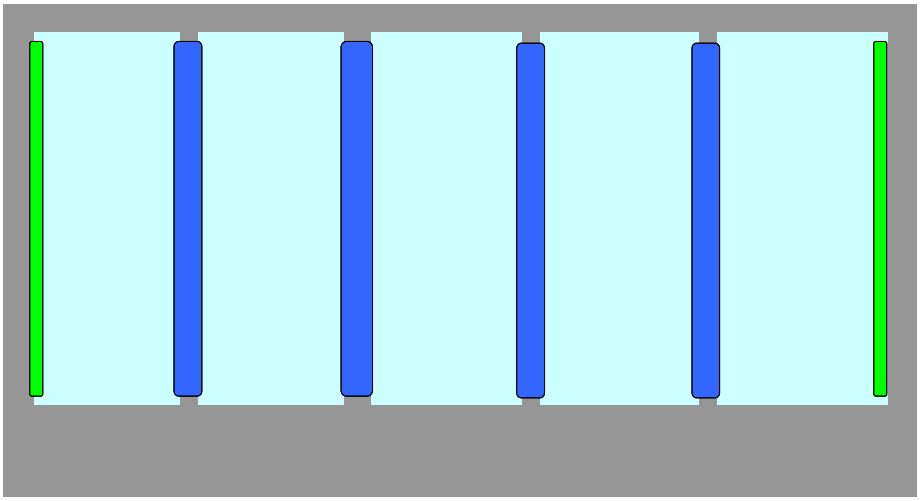
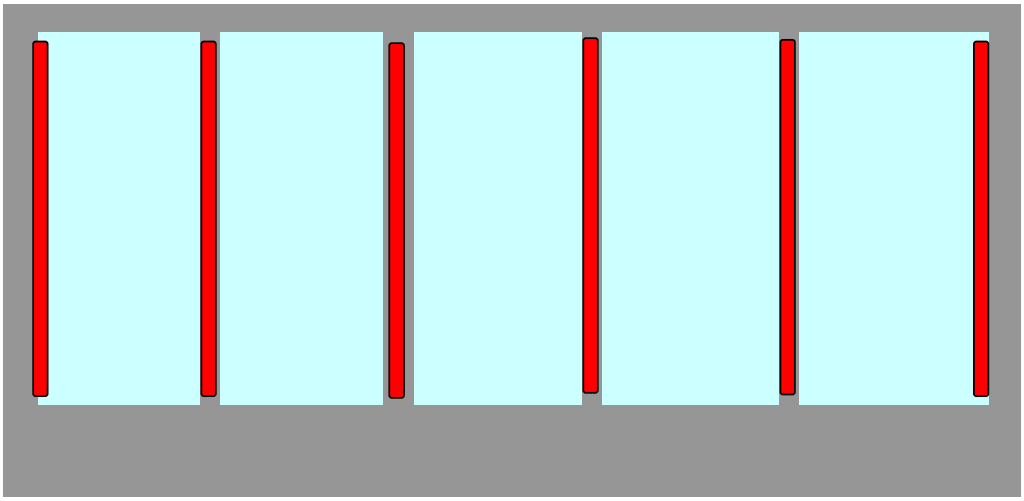


Figure 5A.3.1 Lighting Configurations for VCT.RC.M

VCT.RC.L

Lighting Type:	Fluorescent
Case Length [ft]:	12.7
Bulb Length [ft]:	5
Bulbs In:	6
Bulbs Out:	0



VCT.RC.L

Lighting Type:	LED
Case Length [ft]:	12.7
Bulb Length [ft]:	5
LEDs In:	5
LEDs Out:	0

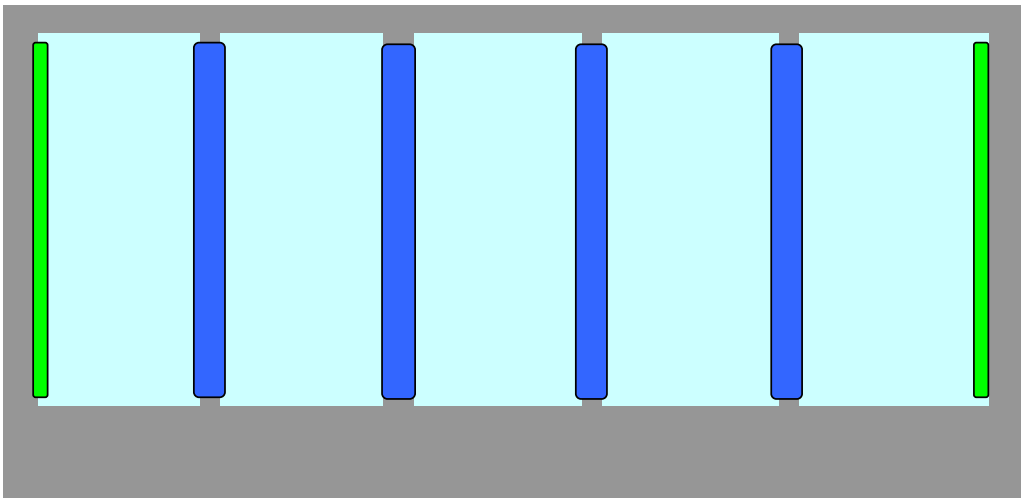
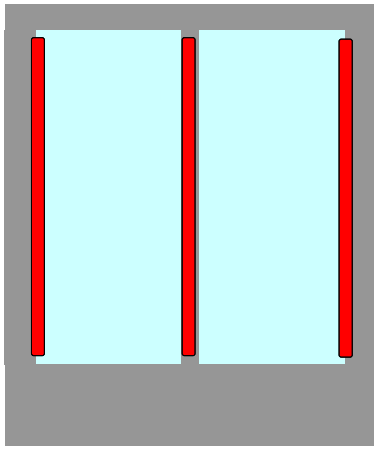


Figure 5A.3.2 Lighting Configurations for VCT.RC.L

VCT.SC.M

Lighting Type:	Fluorescent
Case Length [ft]:	4.5
Bulb Length [ft]:	5
Bulbs In:	3
Bulbs Out:	0



VCT.SC.M

Lighting Type:	LED
Case Length [ft]:	4.5
Bulb Length [ft]:	5
LEDs In:	2
LEDs Out:	0

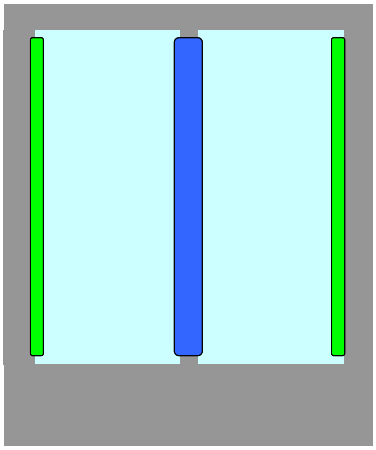
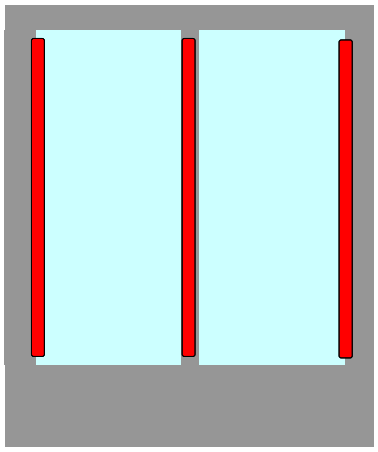


Figure 5A.3.3 Lighting Configurations for VCT.SC.M

VCT.SC.L

Lighting Type:	Fluorescent
Case Length [ft]:	4.5
Bulb Length [ft]:	5
Bulbs In:	3
Bulbs Out:	0



VCT.SC.L

Lighting Type:	LED
Case Length [ft]:	4.5
Bulb Length [ft]:	5
LEDs In:	2
LEDs Out:	0

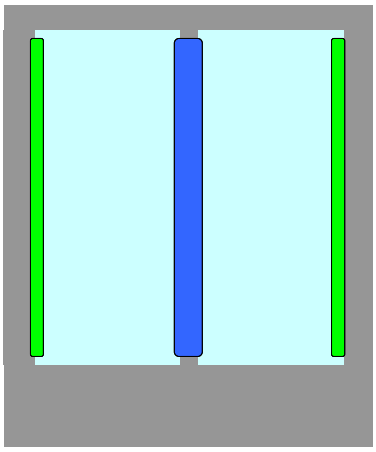


Figure 5A.3.4 Lighting Configurations for VCT.SC.L

VCT.SC.I	
Lighting Type:	Fluorescent
Case Length [ft]:	4.3
Bulb Length [ft]:	5
Bulbs In:	3
Bulbs Out:	0

VCT.SC.I	
Lighting Type:	LED
Case Length [ft]:	4.3
Bulb Length [ft]:	5
LEDs In:	2
LEDs Out:	0

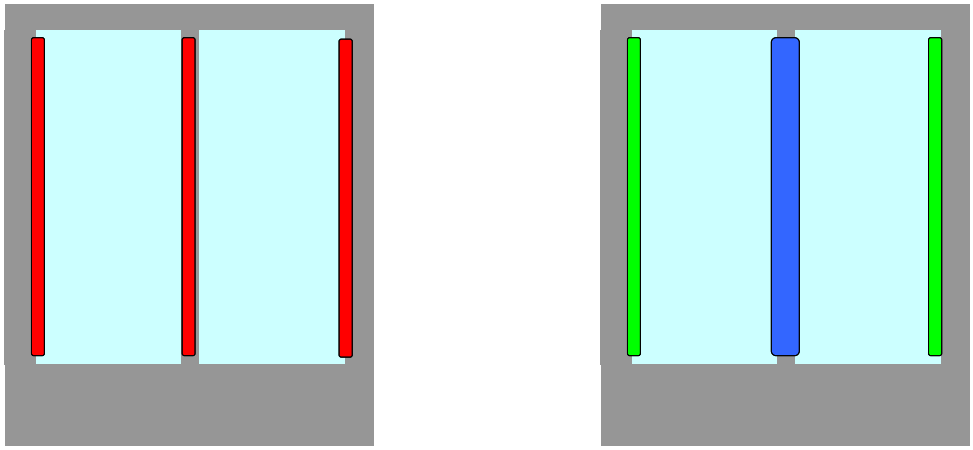


Figure 5A.3.5 Lighting Configurations for VCT.SC.I

PD.SC.M	
Lighting Type:	Fluorescent
Case Length [ft]:	2.5
Bulb Length [ft]:	5
Bulbs In:	2
Bulbs Out:	0

PD.SC.M	
Lighting Type:	LED
Case Length [ft]:	2.5
Bulb Length [ft]:	5
LEDs In:	1
LEDs Out:	0

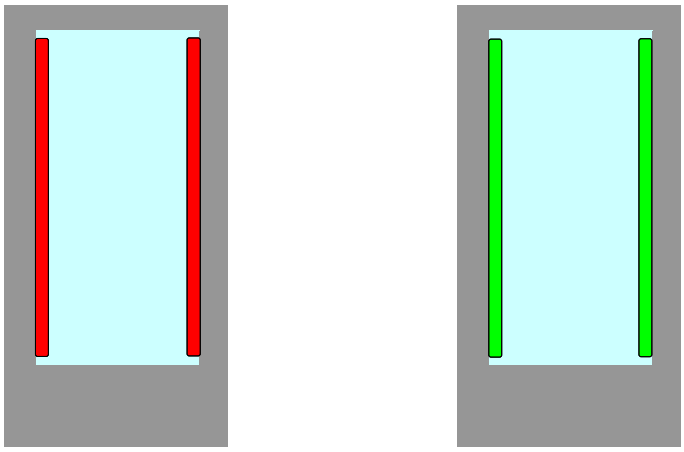


Figure 5A.3.6 Lighting Configurations for PD.SC.M

For equipment classes without doors *(i.e.*, VOP, SVO, SOC, and HZO equipment families), merchandise throughout the entire refrigerated volume is visible to the consumer. Therefore, the entire refrigerated volume must be illuminated.[b] For this application, the directionality characteristic of LED lighting tends to be less effective than fluorescent lighting, which outputs light in all directions surrounding the bulb. In the 2009 final rule, DOE developed

[b] DOE assumes that the HZO equipment family does not contain any lighting because the ambient light of the store provides adequate illumination of the displayed merchandise.

case lighting configurations for these classes as well. Based on discussions with LED refrigerated display case lighting manufacturers and comments from commercial refrigeration equipment manufacturers, DOE determined that there are two different types of LED luminaries used in this equipment. A shelf light is used to illuminate merchandise close to it. Due to the directionality of the light output from an LED luminary, DOE assumes that two shelf lights are used per shelf to provide the desired illumination throughout an entire shelf: one on the front of the shelf and one midway under the shelf. A canopy light is typically located on the canopy of a display case. A canopy light has effectively twice the light output, cost, and power consumption of a shelf light and is typically is used to provide additional illumination of the product in the bottom well of the display case. DOE modeled the LED lighting for the VOP, SVO, and SOC equipment families, in the engineering analysis, using a shelf light. DOE also assumed that the number of LED lighting fixtures per shelf would have to be doubled from what was assumed for fluorescent lighting to provide adequate illumination for the merchandise displayed on each shelf. Illustrative cross-sections of lighting configurations for both fluorescent and LED lighting for the VOP, SVO, and SOC equipment families are shown in Figure 5A.3.7 through Figure 5A.3.12. The green circles represent a bulb or LED inside the refrigerated volume and the red circles represent a bulb or LED outside the refrigerated volume.

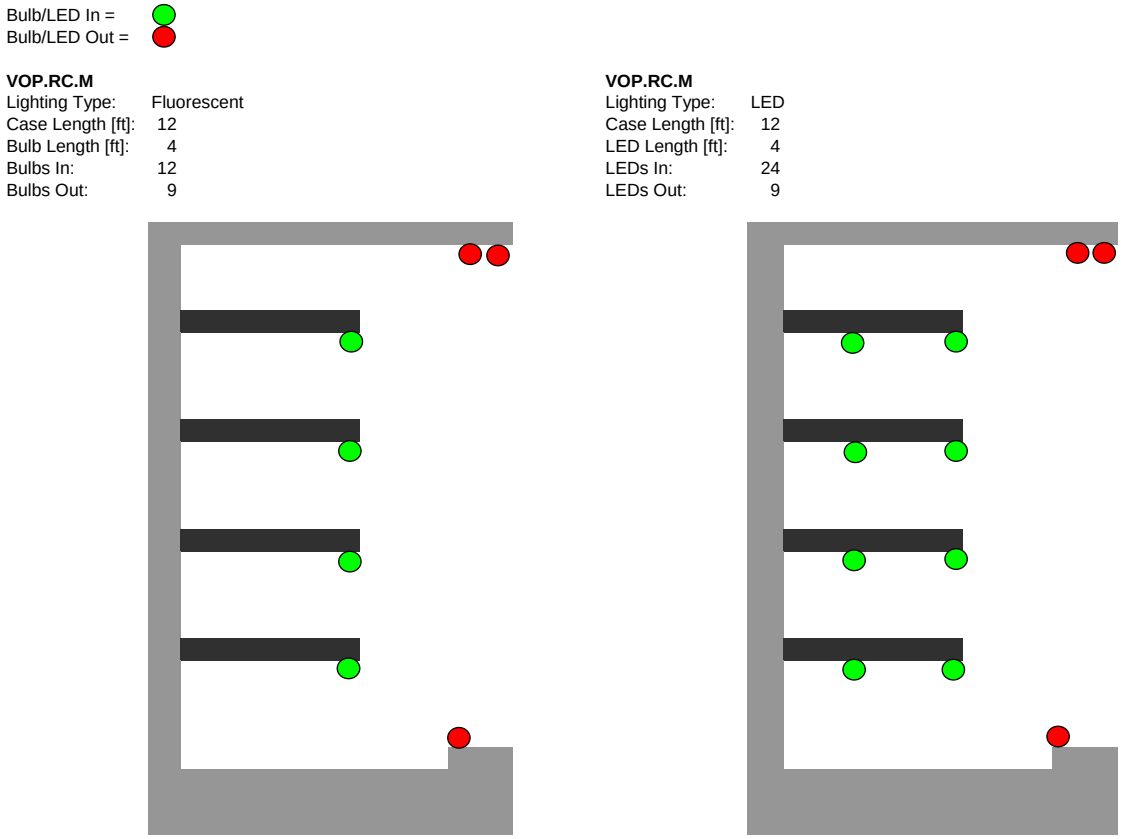
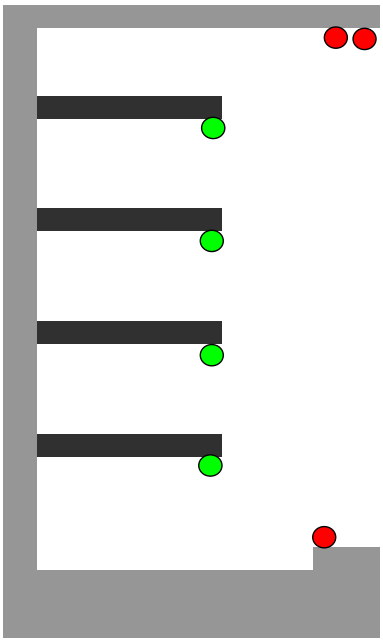


Figure 5A.3.7 Lighting Configurations for VOP.RC.M

VOP.SC.M

Lighting Type:	Fluorescent
Case Length [ft]:	4
Bulb Length [ft]:	4
Bulbs In:	4
Bulbs Out:	3



VOP.SC.M

Lighting Type:	LED
Case Length [ft]:	4
LED Length [ft]:	4
LEDs In:	8
LEDs Out:	3

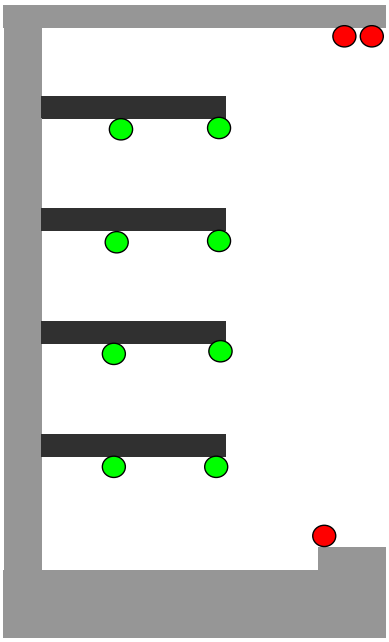
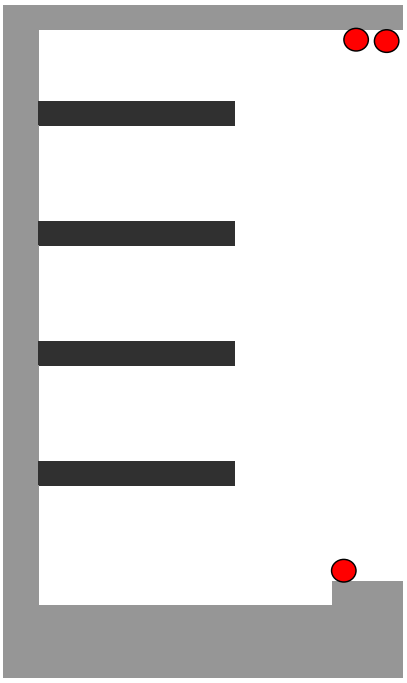


Figure 5A.3.8 Lighting Configurations for VOP.SC.M

VOP.RC.L

Lighting Type:	Fluorescent
Case Length [ft]:	12
Bulb Length [ft]:	4
Bulbs In:	0
Bulbs Out:	9



VOP.RC.L

Lighting Type:	LED
Case Length [ft]:	12
LED Length [ft]:	4
LEDs In:	0
LEDs Out:	9

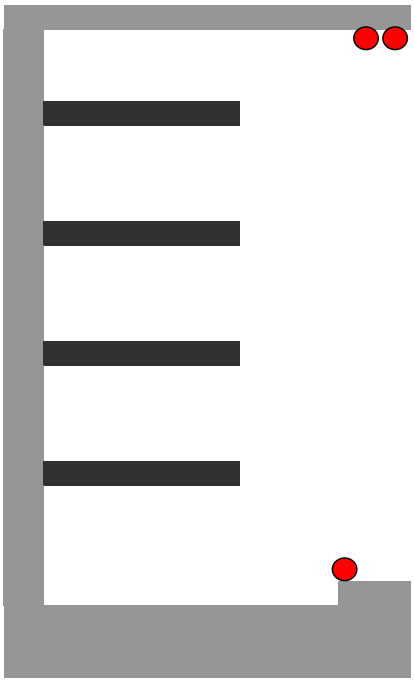
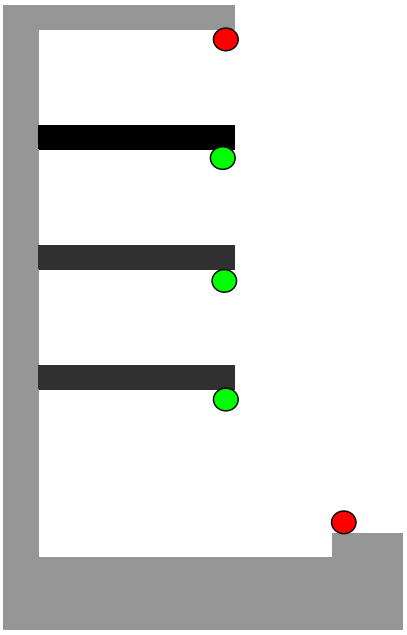


Figure 5A.3.9 Lighting Configurations for VOP.RC.L

SVO.RC.M

Lighting Type:	Fluorescent
Case Length [ft]:	12
Bulb Length [ft]:	4
Bulbs In:	9
Bulbs Out:	6



SVO.RC.M

Lighting Type:	LED
Case Length [ft]:	12
LED Length [ft]:	4
LEDs In:	18
LEDs Out:	6

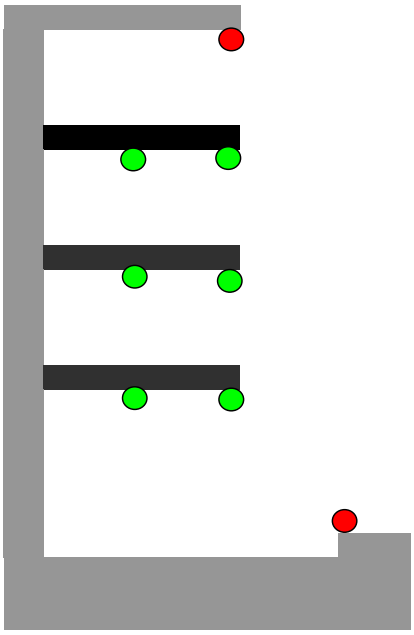
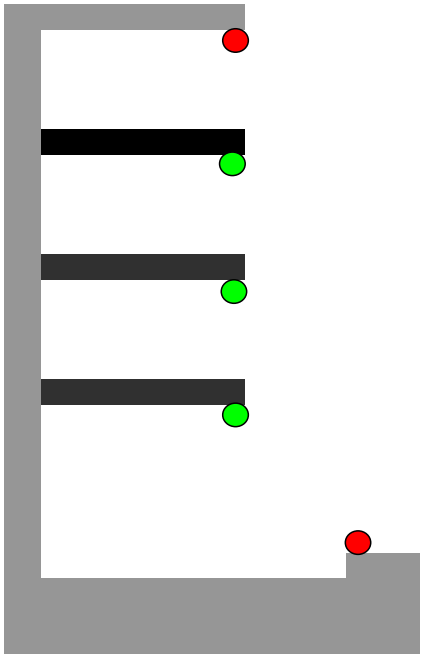


Figure 5A.3.10 Lighting Configurations for SVO.RC.M

SVO.SC.M

Lighting Type:	Fluorescent
Case Length [ft]:	4
Bulb Length [ft]:	4
Bulbs In:	3
Bulbs Out:	2



SVO.SC.M

Lighting Type:	LED
Case Length [ft]:	4
LED Length [ft]:	4
LEDs In:	6
LEDs Out:	2

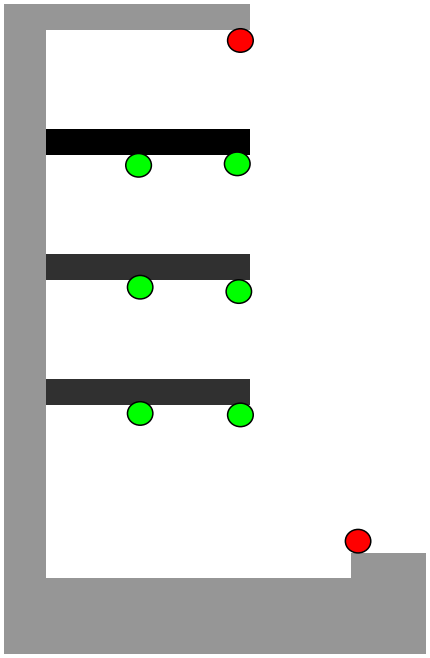
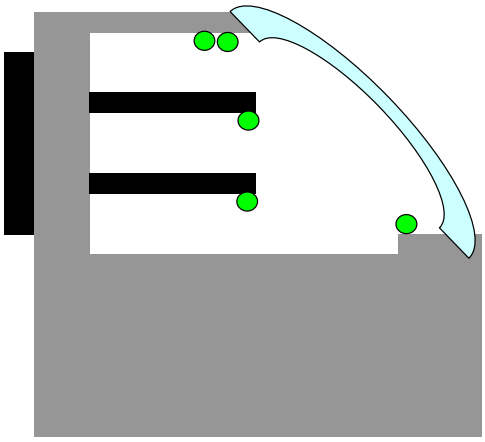


Figure 5A.3.11 Lighting Configurations for SVO.SC.M

SOC.RC.M

Lighting Type:	Fluorescent
Case Length [ft]:	12
Bulb Length [ft]:	4
Bulbs In:	15
Bulbs Out:	0



SOC.RC.M

Lighting Type:	LED
Case Length [ft]:	12
LED Length [ft]:	4
LEDs In:	18
LEDs Out:	0

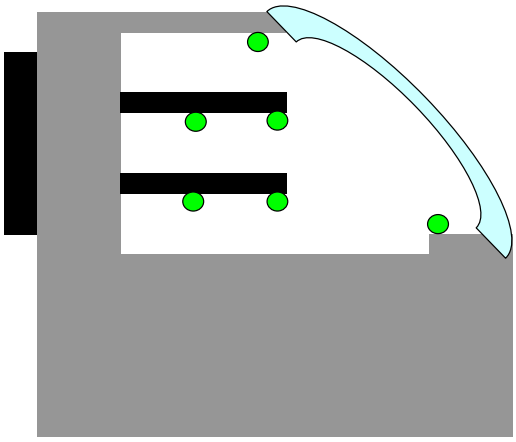


Figure 5A.3.12 Lighting Configurations for SOC.RC.M